

In claim 3, on page 66, line 1, please delete "claim 2" and replace therefore -- claim 24 --. On page 66, lines 12 and 17, and on page 67, line 11, please delete "claim 1" and replace therefore -- claim 23 --. On page 66, lines 6, 10, and 23 and on page 67, lines 3 and 8, please delete "or" and replace therefor -- or --.

In claim 4, on page 67, line 14, please delete "according to claim 1, which" and replace therefor --, wherein said --. In the same line, please delete "anyone" and put a colon after the word "from."

Please rewrite claim 5 as follows:

5(once amended). A compound according to any one of [the preceding] claims 3, 4, 23, or 24, wherein said compound is in the form of [its] a hydrochloride, sulfate, tartrate or citrate [salts] salt.

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Please rewrite claim 14 as follows:

14(once amended). A compound according to any one of [claims 1-10] claims 3, 4, 23 or 24 [further characterised in that it] wherein said compound is isotopically [labelled] labeled.

In claim 16, first line, please delete "labelled" and replace therefor -- labeled --. Please also delete the word "the" that comes immediately before the word "formula." Finally, please delete "claim 1" and replace therefor -- claim 23 --.

In claim 18, first line, please delete the word "the" that appears immediately before the word "formula." In the second line of claim 18, please delete "claim 1" and replace therefor -- claim 23 --.

Please rewrite claims 20-22 as follows:

20(once amended). A method for the treatment of a patient for pain, [whereby] comprising administering to said patient an effective amount of a compound of [the] formula I according to claim 23 [claim 1 is administered to a subject in need of pain management].

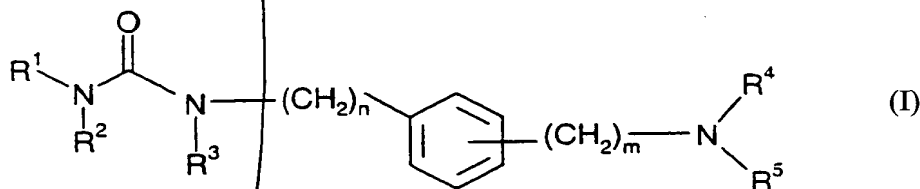
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21(once amended). A method for the treatment of a patient for a gastrointestinal [disorders] disorder, [whereby] comprising administering to said patient an effective amount of a compound of [the] formula I according to claim 23 [claim 1, is administered to a subject suffering from said gastrointestinal disorder].

22(once amended). A method for the treatment of a patient for a spinal [injuries] injury, [whereby] comprising administering to said patient an effective amount of a compound of [the] formula I according to claim 23 [claim 1, is administered to a subject suffering from said spinal injury].

Please add new claims 23-28 as follows:

23(new). A compound according to formula I:



wherein

m and n are each and independently an integer from 1-3, and one or more of the hydrogens in the alkylene chain may optionally be substituted by any one of C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>1</sub>-C<sub>6</sub> alkoxy, or hydroxy; or

one or more of the methylene groups may optionally be substituted by a heteroatom selected from O, N or S;

R<sup>1</sup> is selected from hydrogen, a branched or straight C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>2</sub>-C<sub>6</sub> alkenyl, C<sub>3</sub>-C<sub>8</sub> cycloalkyl, C<sub>4</sub>-C<sub>8</sub> (alkyl-cycloalkyl) wherein the alkyl is a C<sub>1</sub>-C<sub>2</sub> alkyl and the cycloalkyl is a C<sub>3</sub>-C<sub>6</sub> cycloalkyl;

R<sup>2</sup> is selected from any of:

- (i) hydrogen;
- (ii) a straight or branched C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>2</sub>-C<sub>6</sub> alkenyl or C<sub>2</sub>-C<sub>6</sub> alkynyl;

- (iii)  $-\text{[(CH}_2\text{)}_q\text{-aryl]}$ ;
- (iv)  $-\text{[(CH}_2\text{)}_r\text{-heteroaryl]}$  wherein the heteroaryl has from 5 to 10 atoms, each heteroatom being selected from any of S, N and O;  
and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined below; and wherein q and r are each an independently an integer from 0 to 3;
- (v) C<sub>3</sub>-C<sub>10</sub> cycloalkyl, optionally comprising one or more unsaturations and optionally substituted by one or more heteroaryls, where each heteroaryl has from 5 to 10 atoms, each heteroatom being selected from any of S, N and O;  
and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined below;
- (vi) C<sub>6</sub>-C<sub>10</sub> aryl, optionally and independently substituted by one or more heteroaryls having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O and wherein the heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined below;
- (vii) a heteroaryl having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O; wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined below;

or R<sup>1</sup> and R<sup>2</sup> may optionally form a heterocyclic ring;

R<sup>3</sup> is selected from any one of:

- (i) hydrogen;
- (ii) a straight or branched C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>2</sub>-C<sub>6</sub> alkenyl or C<sub>2</sub>-C<sub>6</sub> alkynyl;
- (iii)  $-\text{[(CH}_2\text{)}_q\text{-aryl]}$  wherein q is an integer from 0 to 3, and wherein the aryl may optionally be substituted by one or more heteroaryls having from 5 to 10 atoms, each heteroatom

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being selected from any of S, N and O; and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined below;

- (iv) a heteroaryl-(C<sub>5</sub>-C<sub>10</sub>alkyl), wherein the heteroaryl has from 5 to 10 atoms, each heteroatom being selected from any of S, N and O, and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined below;
- (v) a C<sub>3</sub>-C<sub>10</sub> cycloalkyl, optionally comprising one or more unsaturations and optionally substituted by one or more heteroaryls having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O, and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined below;
- (vi)  $-\text{[(C}_3\text{-C}_6\text{ cycloalkyl)-(CH}_2\text{)}_q\text{]}$  wherein q is an integer from 1 to 3;

R<sup>4</sup> is selected from:

- (i) hydrogen;
- (ii) a straight or branched C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>2</sub>-C<sub>6</sub> alkenyl or C<sub>2</sub>-C<sub>6</sub> alkynyl;
- (iii)  $-\text{[(CH}_2\text{)}_q\text{-aryl]}$  wherein q is an integer from 0 to 3, and wherein the aryl may optionally be substituted by one or more heteroaryls having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O; and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined below;
- (iv) heteroaryl-(C<sub>5</sub>-C<sub>10</sub> alkyl), wherein the heteroaryl has from 5 to 10 atoms, each heteroatom being selected from any of S, N and O, and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined below;

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(v) a C<sub>3</sub>-C<sub>10</sub> cycloalkyl, optionally comprising one or more unsaturations and optionally substituted by one or more heteroaryls having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O; and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined below;

(vi) a C<sub>6</sub>-C<sub>10</sub> aryl, optionally and independently substituted by one or more heteroaryls having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O; and wherein the heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined below;

(vii) a heteroaryl having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O; wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein Y is as defined below;

R<sup>5</sup> is selected from any one of:

(i) hydrogen;

(ii) a straight or branched C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>2</sub>-C<sub>6</sub> alkenyl or C<sub>2</sub>-C<sub>6</sub> alkynyl;

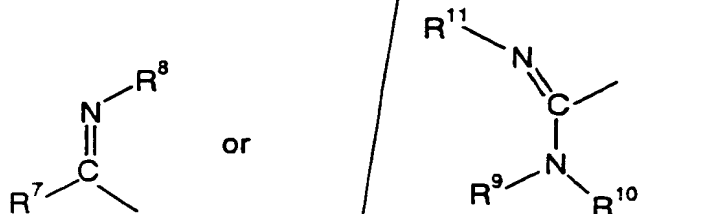
(iii) -[(CH<sub>2</sub>)<sub>q</sub>-aryl] wherein q is an integer from 0 to 3, and wherein the aryl may optionally be substituted by one or more heteroaryls having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O; and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined below;

(iv) a heteroaryl-(C<sub>5</sub>-C<sub>10</sub> alkyl), wherein the heteroaryl has from 5 to 10 atoms, each heteroatom being selected from any of S, N and O; and wherein the aryl and heteroaryl may optionally and independently be substituted 1 or 2 substituents Y, wherein each Y is as defined below;

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(v) a C<sub>3</sub>-C<sub>10</sub> cycloalkyl, optionally comprising one or more unsaturations and optionally substituted by one or more heteroaryls having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O, and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined below;

(vi)



wherein R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup> and R<sup>11</sup> are each and independently selected from:

- (a) hydrogen;
- (b) a straight or branched C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>2</sub>-C<sub>6</sub> alkenyl or C<sub>2</sub>-C<sub>6</sub> alkynyl;
- (c) -[(CH<sub>2</sub>)<sub>q</sub>-aryl] wherein q is an integer from 0 to 3, and wherein the aryl may optionally be substituted by one or more heteroaryls having from 5 to 10 atoms, each heteroatom being selected from any of the S, N and O; and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined below;
- (d) a heteroaryl-(C<sub>5</sub>-C<sub>10</sub> alkyl), wherein the heteroaryl has from 5 to 10 atoms, each heteroatom being selected from any of S, N and O, and wherein the aryl and heteroaryl may optionally and independently be substituted 1 or 2 substituents Y, wherein each Y is as defined below;
- (e) a C<sub>3</sub>-C<sub>10</sub> cycloalkyl, optionally comprising one or more unsaturations and optionally substituted by one or more heteroaryls having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O;

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and wherein the aryl and heteroaryl may optionally and independently be substituted 1 or 2 substituents Y, wherein each Y is as defined below;

- (f) a C<sub>6</sub>-C<sub>10</sub> aryl, optionally and independently substituted by one or more heteroaryls having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O, and wherein the heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined below;

or R<sup>4</sup> and R<sup>5</sup> may optionally form a heterocyclic ring;

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Y is each and independently selected from any of: hydrogen, CH<sub>3</sub>; -(CH<sub>2</sub>)<sub>p1</sub>CF<sub>3</sub>; halogen; C<sub>1</sub>-C<sub>3</sub> alkoxy; hydroxy; -NO<sub>2</sub>; -OCF<sub>3</sub>; -CONR<sup>a</sup>R<sup>b</sup>; -COOR<sup>a</sup>; -COR<sup>a</sup>; -(CH<sub>2</sub>)<sub>p2</sub>NR<sup>a</sup>R<sup>b</sup>; -(CH<sub>2</sub>)<sub>p3</sub>CH<sub>3</sub>; (CH<sub>2</sub>)<sub>p4</sub>SOR<sup>a</sup>R<sup>b</sup>; -(CH<sub>2</sub>)<sub>p5</sub>SO<sub>2</sub>R<sup>a</sup>; -(CH<sub>2</sub>)<sub>p6</sub>SO<sub>2</sub>NR<sup>a</sup>; C<sub>4</sub>-C<sub>8</sub>(alkyl-cycloalkyl) wherein the alkyl is a C<sub>1</sub>-C<sub>2</sub> alkyl, and the cycloalkyl is a C<sub>3</sub>-C<sub>6</sub> cycloalkyl; 1 or 2 heteroaryls having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O; and oxides selected from N-oxides or sulfoxides; and wherein:

R<sup>a</sup> and R<sup>b</sup> are each and independently selected from hydrogen, a branched or straight C<sub>1</sub>-C<sub>6</sub> alkyl, a C<sub>1</sub>-C<sub>6</sub> alkenyl, a C<sub>3</sub>-C<sub>8</sub> cycloalkyl; and wherein:

p<sup>1</sup>, p<sup>2</sup>, p<sup>3</sup>, p<sup>4</sup>, p<sup>5</sup> and p<sup>6</sup> are each and independently 0, 1 or 2;

as well as pharmaceutically acceptable salts, isomers, hydrates, isoforms and prodrugs thereof.

24(new). A compound according to formula I of claim 23, wherein:

m=n=1;

R<sup>1</sup> is selected from:

- (i) hydrogen;

(ii) a branched or straight C<sub>1</sub>-C<sub>6</sub> alkyl; and

(iii) a C<sub>3</sub>-C<sub>8</sub> cycloalkyl;

R<sup>2</sup> is selected from any of:

(i) hydrogen;

(ii) a straight or branched C<sub>1</sub>-C<sub>6</sub> alkyl;

(iii) -[(CH<sub>2</sub>)<sub>q</sub>-aryl];

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(iv) -[(CH<sub>2</sub>)<sub>r</sub>-heteroaryl] wherein the heteroaryl has from 5 to 10 atoms, each heteroatom being selected from any of S, N and O; and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined in claim 23; and wherein q and r are each and independently an integer from 0 to 3;

(v) a C<sub>3</sub>-C<sub>6</sub> cycloalkyl, optionally comprising one or more unsaturations and optionally substituted by one or more heteroaryls having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O; and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, where each Y is as defined in claim 23;

(vi) a C<sub>6</sub>-C<sub>10</sub> aryl, optionally and independently substituted by 1 or 2 substituents Y, wherein each Y is as defined in claim 23;

(vii) a heteroaryl having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O; wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined in claim 23;

or R<sup>1</sup> and R<sup>2</sup> may optionally form a heterocyclic ring;



R<sup>3</sup> is selected from any one of:

- (i) hydrogen;
- (ii) a straight or branched C<sub>1</sub>-C<sub>6</sub> alkyl;
- (iii) -[(CH<sub>2</sub>)<sub>q</sub>-aryl] wherein q is an integer from 0 to 3, and wherein the aryl may optionally be substituted by one or more heteroaryls having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O; and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined in claim 23;
- (iv) a heteroaryl-(C<sub>5</sub>-C<sub>10</sub> alkyl), wherein the heteroaryl has from 5 to 10 atoms, each heteroatom being selected from any of S, N and O, and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined in claim 23;
- (v) a C<sub>3</sub>-C<sub>10</sub> cycloalkyl, optionally comprising one or more unsaturations and optionally substituted by one or more heteroaryls having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O, and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined in claim 23;
- (vi) -[(C<sub>3</sub>-C<sub>6</sub> cycloalkyl)-(CH<sub>2</sub>)<sub>q</sub>] wherein q is an integer from 1 to 3;

R<sup>4</sup> is selected from:

- (i) hydrogen;
- (ii) a straight or branched C<sub>1</sub>-C<sub>6</sub> alkyl;
- (iii) -[(CH<sub>2</sub>)<sub>q</sub>-aryl] wherein q is an integer from 0 to 3, and wherein the aryl may optionally be substituted by one or more heteroaryls having from 5 to 10 atoms each heteroatom being selected from any of S, N and O; and wherein the aryl and heteroaryl may

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optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined in claim 23;

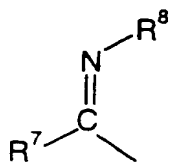
- (iv) a heteroaryl-(C<sub>5</sub>-C<sub>10</sub> alkyl), wherein the heteroaryl has from 5 to 10 atoms, each heteroatom being selected from any of S, N and O, and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined in claim 23;
- (v) a C<sub>6</sub>-C<sub>10</sub> aryl, optionally and independently substituted by one or more heteroaryls having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O; and wherein the heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined in claim 23;

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R<sup>5</sup> is selected from any one of:

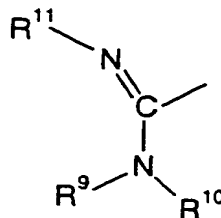
- (i) hydrogen;
- (ii) a straight or branched C<sub>1</sub>-C<sub>6</sub> alkyl;
- (iii) -[(CH<sub>2</sub>)<sub>q</sub>-aryl] wherein q is 0 or 1, and wherein the aryl may optionally be substituted by one or more heteroaryls having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O; and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined in claim 23;
- (iv) a heteroaryl-C<sub>5</sub>-C<sub>10</sub> alkyl, wherein the heteroaryl has from 5 to 10 atoms, each heteroatom being selected from any of S, N and O; and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined in claim 23;
- (v) a C<sub>3</sub>-C<sub>6</sub> cycloalkyl, optionally comprising one or more unsaturations and optionally substituted by one or more heteroaryls having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O, and wherein the aryl and heteroaryl may

optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined in claim 23;

(vi)



or



wherein: R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup>, R<sup>11</sup> are each and independently selected from:

- (a) hydrogen;
- (b) a straight or branched C<sub>1</sub>-C<sub>6</sub> alkyl or C<sub>2</sub>-C<sub>6</sub> alkenyl;
- (c) -[(CH<sub>2</sub>)<sub>q</sub>-aryl] wherein q is an integer from 0 to 3, and wherein the aryl may optionally be substituted by one or more heteroaryls having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O; and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined in claim 23;
- (d) a heteroaryl-(C<sub>5</sub>-C<sub>10</sub> alkyl), wherein the heteroaryl has from 5 to 10 atoms, each heteroatom being selected from any of S, N and O; and wherein the aryl and heteroaryl may optionally and independently be substituted by 1 or 2 substituents Y, wherein each Y is as defined in claim 23;
- (e) a C<sub>3</sub>-C<sub>10</sub> cycloalkyl, optionally comprising one or more unsaturations and optionally substituted by one or more heteroaryls having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O; and wherein the aryl and the heteroaryl may optionally and independently be substituted 1 or 2 substituents Y, wherein each Y is as defined in claim 23;

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- (f) a C<sub>6</sub>-C<sub>10</sub> aryl, optionally and independently substituted by one or more heteroaryls having from 5 to 10 atoms, each heteroatom being selected from any of S, N and O, and wherein the heteroaryl may optionally and independently be substituted 1 or 2 substituents Y, wherein each Y is as defined in claim 23;

or R<sup>4</sup> and R<sup>5</sup> may form a heterocyclic ring which may optionally and independently be substituted 1 or 2 substituents Y, wherein each Y is as defined in claim 23.

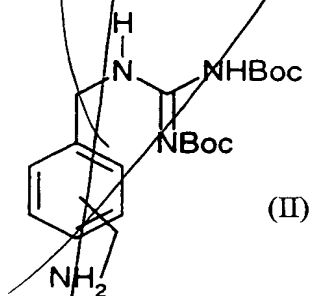
25(new). A method of diagnosing a patient for a disease characterized by the degeneration or dysfunction of opioid receptors, comprising administering to said patient an effective amount of the isotopically labeled compound of claim 14.

26(new). A process for the preparation of a compound of formula I according to claim 23, comprising:

- a) converting bis-amino xylylene of the formula:



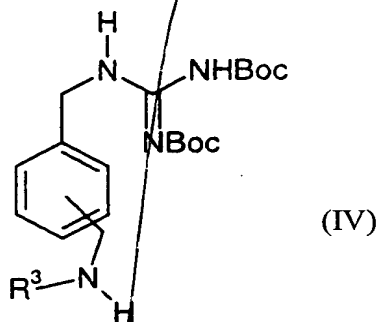
into mono-(diBoc)-guanidinomethyl of formula (II):



(II)

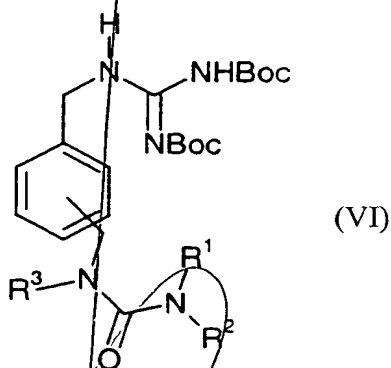
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- (b) reacting said mono-(diBoc)-guanidinomethyl of formula (II) with an aldehyde to produce a secondary amine of formula (IV):

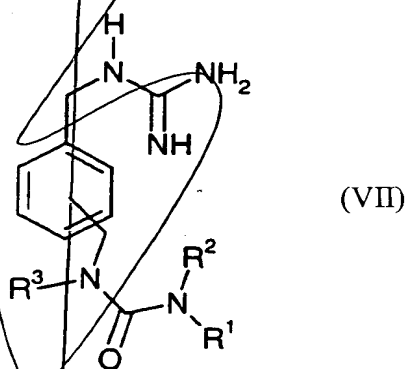


wherein R<sup>3</sup> is as defined in formula (I) of claim 23;

- (c) subjecting said secondary amine of formula (IV) to urea formation to produce a compound of formula (VI):



- (d) deprotecting said compound of formula (VI) to produce a compound of formula (VII):

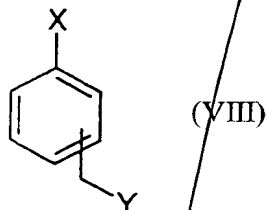


wherein R<sup>1</sup>, R<sup>2</sup>, and R<sup>3</sup> are as defined in formula (I) of claim 23.

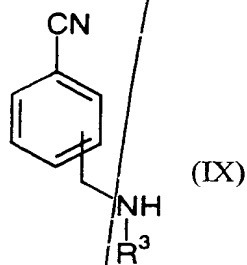
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27(new). A process for the preparation of a compound of formula (I) according to claim 23, comprising:

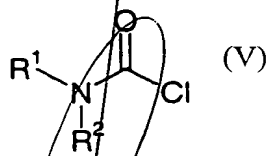
- (a) subjecting a compound of formula (VIII):



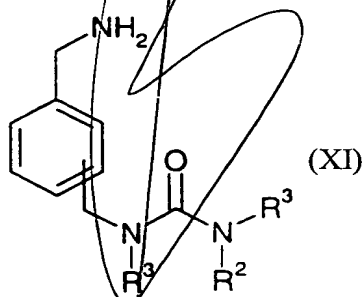
wherein X is CN and Y is CHO, to reductive amination using a primary amine of formula  $R^3NH_2$ , wherein  $R^3$  is as defined in formula (I) of claim 23, to produce a compound of formula (IX):



- (b) subjecting said compound of formula (IX) to an urea reaction using a chloroformate of formula (V):



- (c) reducing the product of step b) to provide a compound of formula (XI)

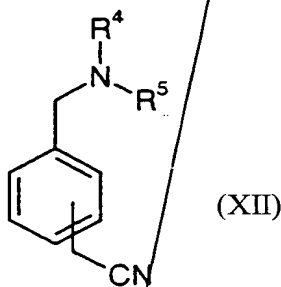


wherein  $R^1$ ,  $R^2$ , and  $R^3$  are as defined in formula (I) of claim 23.

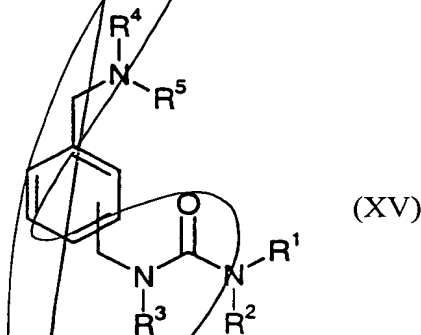
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28(new). A process for the preparation of a compound of formula (I) according to claim 23, comprising:

- a) reacting a compound of formula (VIII), wherein X is CH<sub>2</sub>BR and Y is CN, with an amine of formula R<sup>4</sup>R<sup>5</sup>NH, wherein R<sup>4</sup> and R<sup>5</sup> are as defined in formula (I) of claim 23, to produce a compound of formula (XII):



- b) reducing said compound of formula (XII);
- c) reacting the product of step b) with an aldehyde of formula R<sup>3</sup>CHO, wherein R<sup>3</sup> is as defined in formula I of claim 23;
- d) subjecting the compound formed in step c) to an urea reaction with a chloroformate of formula (V) to produce a compound of formula (XV):



wherein R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, and R<sup>5</sup> are as defined in formula I of claim 23.

### Remarks

Most of the amendments described above are minor in nature and are either designed to comply with the formal requirements of patent law or correct minor typographical and grammatical errors.

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